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Art. XIX.—*Does the Flowering of Plants of the Victorian Flora Repeat the Order of their Evolution?*

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In Volume 43, Part 2, p. 154, (1931) of the Proceedings of the Royal Society of Victoria a paper, "Flowering Periods of Victorian Plants" (by J. Heyward), appeared. In this paper Miss Jean Heyward discussed my theory as to the parallelism between the phylogenetic position of plants and the order of their flowering, i.e., that the percentage of superior flowering types, like Sympetals, flowers with inferior ovaries, the Compositae, &c., gradually increases to the end of the summer so that these superior types begin to prevail to the end of the vegetative season as well as to the end of the process of evolution(1).

Miss J. Heyward has constructed nine tables giving the flowering periods of the Victorian flora, and remarks that "the Victorian flora does not agree with this hypothesis, for of all the tables constructed, No. 9 alone shows any agreement with Illichevsky's theory." I have examined her tables, and my conclusions are quite the opposite. The first reason for the difference between my results and those of Miss Heyward was the wrong method of calculating percentages that she used. Whereas I calculated the number of species of a superior type flowering during a month per cent. to the total number of all the species (all the Dicotyledons, for instance) flowering in the same period, Miss Heyward calculated the percentage of a superior type flowering during a certain month as compared with the whole number of flowers of the same type in the Victorian flora. The first method gives us the relation of the superior type flowering to the total number of flowers of this month, whereas Miss Heyward's tables give only the absolute position of the maximal flowering of blossoms of a certain type without any comparison with the flowering of superior or inferior types. Let us

calculate by my method the percentage of superior flowering types shown in Miss Heyward's tables:—

Months.		June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.
Total no. of Dicots. (genera) Table No. 1		28	61	118	226	305	328	313	250	160	105	61	29
Dicots. with inferior ovaries	No. of genera	3	8	23	56	81	91	89	76	33	34	22	11
	% from the whole no. of Dicots. for the same month	10·7	13	19·5	24·8	27	28·5	28·4	30·4	20·6	32·4	36·1	38
Sympetals	No. of genera	7	14	34	72	117	128	118	95	53	38	22	11
	% from the whole no. of Dicots. for the same month	25	23	29	31·9	38·4	39	37·7	38	33·1	36·2	36·1	37·9
Compositae	No. of genera	2	4	12	26	35	38	33	28	15	14	10	7
	% from the whole no. of Dicots. for the same month	7·1	6	10	11·5	11·5	11·6	10·5	11·7	9·4	13·3	16·4	24·1

Thus the Dicotyledons with an inferior ovary show a regular increase in percentage number (from 10.7 per cent. in June to 38.0 per cent. in May) during the whole year with the exception of February; the Sympetals show a less regular increase till November (evidently up to the beginning of the secondary flowering[1]; the Compositae reach their first maximum per cent. in September, then stop or decrease (December, February), and again increase to the end of the year in March, April, May. We see thus that the percentage of the superior types in flower increases during the growing period.

I must here make the remark that Miss Heyward calculated the number of genera, not species, as I did. The fewer systematic units we use the more precise the results. It is probable that the anomalous results with the flowering of the Orchids in Victoria (whether using Miss Heyward's or my method of calculating percentages) depend on this fact. It seems to me to be a little hazardous to use not only data from field observations, but also those from herbariums, as Miss Heyward has done; the herbarium data often include the data of secondary flowering and of early blossoms which in some seasons appear a month

or more earlier than the normal flowering, a phenomenon well known in Russian phenological literature. Probably it would be advisable to include the flowering of Eucalyptus species, although they flower bienially and triennially. Of course, I agree completely with Miss Heyward's remarks on the factors influencing the date of flowering; as for the work done by Miss Heyward, it is a very interesting and valuable confirmation of my theory in a climate and life conditions so distinct from those for which the theory was propounded, and I cannot accept Miss Heyward's statement that her results do not agree with the theory. Especially Dicotyledons with an inferior ovary display as complete an agreement with my theory as I could wish.

Bibliography.

(1) S. Illichevsky. The data of systematics and the order of flowering. *Proceedings of the International Congress of Plant Sciences*, ii., pp. 1469-1471, 1931.